

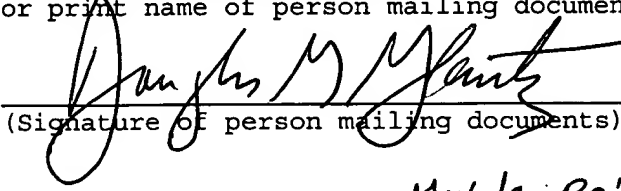
PATENT

CERTIFICATION

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Guide Railing Having Variable
CUSTOMIZED ~~BARRIER FENCES HAVING~~
~~VARIABLE~~ POST POSITIONS

BACKGROUND OF THE INVENTION

1. Technical Field

This invention relates to a barrier construction. In one aspect, this invention relates to the construction, design, and installation of barriers where customization is required such as in industrial facilities and businesses.

2. Background

Barriers or fences are a means for controlling access to specific areas. Industrial facilities often use barriers as a means for separating pedestrian traffic from machinery, mobile equipment, and the like and the prevention of access to hazardous areas. These barriers commonly consist of longitudinal members mounted on vertical support posts and secured thereto.

The following patents are representative of barrier systems and the like.

U.S. Patent No. 6,036,399 discloses a type of crash barrier for installation along superhighways. The barriers are mounted between two support elements having overlapping regions allowing, on the one hand, to be secured to an adjacent crash barrier by means of members that pass through pierced holes which are opposite each other and, on the other hand, to be secured to the support elements by means of members passing through orifices provided opposite each other. To facilitate joining of the barriers, the overlapping regions include at least one stud oriented along the longitudinal axis of the crash barrier toward the middle of the crash barrier, and, wherein the other region includes, on the genatrix that receives the stud, a slot intended to receive the stud of the adjacent crash barrier.

U.S. Patent No. 3,822,863 discloses a post of an elongated extruded aluminum having linear, uninterrupted surfaces and having an integral post portion of one cross-section and an integral drive blade portion of a different cross-section. The post is formed by extruding aluminum into an elongated length having a generally "T" shaped cross-section with integral flange segments extending outwardly in opposite directions from each other. The length is sectioned into barrier post lengths, e.g., long enough to extend about 20-30 inches above the ground and to be driven into the ground a distance of about 3-5 feet.

U.S. Patent No. 4,295,637 discloses a guard rail for use along a road. The guard rails include two U-shaped side portions extending longitudinally with a grid like web connecting the side portions. The grid-like web permits the guard rail to be made
5 much wider affording greater protection to motorists and protection against dazzling light from opposing traffic.

U.S. Patent No. 3,276,750 discloses improved railing constructions for bridges based on a plurality of substantially horizontally disposed guard rails which are secured to support
10 posts by substantially U-shaped mounting brackets.

U.S. Patent No. 5,069,576 discloses a deformable safety barrier for placement along the side of a road. Metal section bars are assembled to one another by partial overlapping and by bolting, and are supported at intervals by vertical posts. The
15 bars have a central groove with a rib on either side projecting toward the road.

British Patent No. 1,396,301 discloses a barrier for highway applications including a plurality of spaced upright posts anchored at their bases and at least two vertically spaced rails
20 connected to the posts. A breakaway section is incorporated into the barrier and includes a unit having a resistance to a longitudinal load in excess of the resistance of any of the posts and being connected together by a structural member different from the rails so as to provide a cantilever anchorage.

British Patent No. 2,129,845 discloses a fence of W-shaped channels joined to W-shaped vertical posts by fastening the channels base-to-base.

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SUMMARY OF THE INVENTION

This invention includes apparatus and method providing a barrier construction and is particularly directed to the construction, design, and installation of barriers where customization is required such as in industrial facilities and businesses. In a barrier or fence including at least one longitudinally extending railing supportably fastened to vertically extending posts, the improvement of the present invention in such barrier construction including:

at least one longitudinally extending railing having at least one generally T-shaped or U-shaped channel extending in the longitudinal direction of said railing with at least one leg of the T-shaped or U-shaped channel extending inwardly within the T-shaped or U-shaped channel;

vertically extending posts having an elongated body and having at least one flange segment extending outwardly in opposite directions and having at least one perforation in each flange segment; and

fastening means slidably embraced within said T-shaped or U-shaped channel and capable of communication through a perfora-

tion in said flange segment for fastening said railing to said vertical post.

There are several advantages which can be obtained through the use of the improved fences described herein:

5 an ability to customize fencing in terms of different lengths and post supports;

an ability to easily produce via extrusion rails and supports for the improved fencing; and

10 an ability to utilize a variety of construction materials, e.g., aluminum and polymeric materials, e.g. polyethylene, polypropylene polyester and the like which may be extruded or molded.

BRIEF DESCRIPTION THE DRAWINGS

15 Figure 1 is an isometric view of the barrier including the longitudinal extending railings and vertical posts.

Figure 2 is a side view of the longitudinal extending railing.

Figure 3 is a top view of a vertical post with the flange segments displaced at an angle of 180 degrees.

20 Figure 4 is a top view of a vertical post with the flange segments displaced at an angle of 90 degrees.

DETAILED DESCRIPTION OF THE INVENTION

One of the problems of customizing barriers within industrial facilities and consumer businesses, e.g., hardware stores, for example, is that barriers of different lengths and non-uniformity of distances between vertical support posts and in elevation are desired. Installation has been found to require cutting the rails to form, drilling positioning holes or perforations in the railings, and then fastening the rails to the vertical posts with bolts and the like. This on-site fabrication process is time consuming and adds greatly to installation costs.

The apparatus and method of the present invention provide for a positioning of barrier railings to overcome the problem of the non-uniformity of elevation of the vertical support posts, as the support post connects to the railing, and provide for a variably select elevation.

To facilitate an understanding of the improved barrier fencing and the ease of fence customization, reference is made to the drawings.

Referring now to Figure 1, an isometric view of a barrier or a fence 1 shows a single longitudinal extending railing 3 having a longitudinal direction as indicated by the directional arrow A and a width indicated by the directional arrow B. The railing can be of variable width and length,, and those parameters are dependant primarily upon the barrier application to be addressed.

The railing has a length of from 5-20 feet and a width of from ½ to 2 feet. The railing can be a solid panel, either straight, waffle, W-shaped or the like. It also can be in the form of a grid.

5 Common to the longitudinal extending railing 3 is at least one substantially T-shaped channel 5 extending in the longitudinal direction of the railing. As shown in Figure 1, two T-shaped channels or slots 5 are shown. Sometimes the channel or slot is substantially U-shaped.

10 ~~Sub 3~~ To facilitate an understanding of the characteristics of the T-shaped or U-shaped channel, reference is made to Figure 2. If the slot is generally T-shaped, the tee has extending legs which provides support for fastening means. If substantially U-shaped, at least one of the legs, preferably both of the legs of the U-shaped channel 5, should extend inwardly. As shown, each of the legs of the generally U-shaped channel has an inwardly extending tab 7 at the end of each leg. Tab 7 then acts as the inwardly extending leg of the U-shaped channel and provides a mechanism for retaining the fastening means to be described while
15 permitting slidable movement of the fastening means within the U-shaped channel along the longitudinal axis A. Optionally, the legs of the U-shaped channel may be bent inwardly to retain the fastening means while permitting slidable movement, but the use of inwardly extending tabs is preferred. The number of T-shaped
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or U-shaped channels 5 carried by railing 3 is dependant primarily upon the width of railing 3 and design criteria for support. Typically, a railing carries two T-shaped or U-shaped channels.

Figure 3 is a top view of vertical post 9 and illustrates the mechanism used for fastening to railing 3. These posts may be of various shapes, e.g., circular, square or rectangular, solid or tubular. Each vertical post 9 has at least one (two shown) flange segments 11 tangential thereto for engagement with a T-shaped or U-shaped channel. The flange segments 11 extend continuously along vertical post 9. The flange segments extend outwardly in opposite directions. In Figure 3, there are shown on a 180 degree plane while Figure 4 shows these flange segments at a 90 degree angle. When the flange segments are at an angle, e.g., 45 -90 degrees, they permit a single post to be used as a corner post. At least one perforation 13 is present in each flange segment 11 to permit passage of the fastening means through the perforation.

Installation of the barrier in an industrial setting, home improvement center, or elsewhere is performed by fastening the flanged segments 11 to the substantially T-shaped or U-shaped channels 5. Bolts are used as the fastening means for joining the railing to the vertical posts. The bolt heads can be square, hexagonal, or other shape so long as they are slidably retained within the T-shaped or U-shaped channel. The bolts extend

outwardly from the longitudinally extending rail and through the perforation in the flange segments 11. A nut or other fastening mechanism is used to complete the fastening of the longitudinally extending railing to the vertical post.

5 For customization, the location of vertical posts 9 along railing 3 can be facilitated by the use of the T-shaped or U-shaped channels having inwardly legs or inwardly facing tabs in that the head of a bolt, nut, or such other fastening means is slidably retained within T-slot or U-shaped channel 5. Such design permits the vertical posts to be installed intermediate the ends of railing 3 depending upon the desired railing support required or they may be positioned at the ends of the railing. When the vertical posts are positioned at the ends of railing 3, two railings may be joined to a single vertical post 9 by fastening an end of railing 3 to one flange segment 11 and an end of another railing 3 to the opposite and outwardly extending flange segment 11.

The longitudinal railings 3 and vertical posts can be formed from a variety of materials, e.g., various plastics or aluminum. The may be formed from molds or by extrusion processes. An effective barrier system which lends itself to production is one formed from aluminum by an extrusion process.

What is Claimed Is: